

CLAIMS

What is claimed is:

1. A speaker apparatus, including a speaker, and a circuit to operate the speaker, comprising:
 - a speaker box, having an opening, to enclose a back of the speaker;
 - a casing, accommodating the speaker box combined with the speaker and the circuit therein, to communicate with an outside to dissipate heat from the circuit; and
 - a duct, penetrating the casing and the speaker box, to emit back sound of the speaker.
2. The speaker apparatus according to claim 1, wherein the speaker box is accommodated in the casing, to leave a space between the speaker box and the casing, and the circuit is accommodated in the casing, being disposed above the speaker box.
3. The speaker apparatus according to claim 2, wherein the casing has an upper part and a lower part, both parts being opened, respectively.
4. The speaker apparatus according to claim 3, further comprising:
 - a base member supporting the lower part of the casing, allowing external air to enter the casing; and
 - a top member provided on the upper part of the casing, allowing air to flow out from the casing.
5. The speaker apparatus according to claim 4, wherein the base member slopes upwardly to a center thereof to guide air inflow, and the top member slopes downwardly to a center thereof to guide air outflow.
6. The speaker apparatus according to claim 5, further comprising:
 - a speaker supporter provided between the base member and the lower part of the casing to support the speaker and the lower part of the casing; and
 - a top supporter provided between the top member and the upper part of the casing so as to support the top member.

7. The speaker apparatus according to claim 6, wherein a control panel, which is electrically connected to the circuit and the speaker, is mounted on the casing.

8. The speaker apparatus according to claim 1, wherein the circuit includes an amplifying circuit to amplify sound.

9. The speaker apparatus according to claim 8, wherein the speaker includes a base speaker.

10. The speaker apparatus according to claim 9, wherein the casing is shaped like a cylinder having opposite openings, and the speaker box is shaped like a cylinder having one opening.

11. A speaker apparatus, including a speaker and a circuit to operate the speaker, comprising:
a speaker box, including a first duct hole, to enclose a back of the speaker;
a casing, into which the speaker box is insertably held and in which the circuit is to be accommodated, having first and second openings and a second duct hole, the second duct hole being substantially coaxial with the first duct hole when the speaker box is held in the casing;
a duct, penetrating the first and second duct holes, to emit sound emanating from the speaker, wherein air enters and exits the casing through the first and second openings and to cool the circuit.

12. The speaker apparatus according to claim 11, further comprising a space between the speaker box and the casing through which the entering and exiting air flows.

13. The speaker apparatus according to claim 12, wherein the circuit is disposed above the speaker box in the casing.

14. The speaker apparatus according to claim 12, further comprising upper and lower parts of the casing, wherein the first and second openings of the casing are in the upper and lower parts of the casing, respectively.

15. The speaker apparatus according to claim 14, further comprising a base member, to support the lower part of the casing, and to allow external air to enter the casing.

16. The speaker apparatus according to claim 15, further comprising a top member, on the upper part of the casing, to allow air to flow out from the casing.

17. The speaker apparatus according to claim 16, wherein the base member and the top member each comprise a center, wherein the base member slopes upwardly toward the center of the base member, and the top member slopes downwardly toward the center of the top member.

18. The speaker apparatus according to claim 17, further comprising a speaker supporter between the lower part of the casing and the base member to support the speaker and the lower part of the casing.

19. The speaker apparatus according to claim 18, further comprising a top supporter provided between the top member and the upper part of the casing to support the top member.

20. The speaker apparatus according to claim 19, further comprising a control panel, mounted on the casing, which is electrically connected to the circuit and the speaker.

21. The speaker apparatus according to claim 11, wherein the circuit comprises an amplifying circuit to amplify sound.

22. The speaker apparatus according to claim 21, wherein the speaker comprises a base speaker.

23. The speaker apparatus according to claim 22, wherein the casing is cylindrical and stands with the first end lower than the second end, wherein the first and second openings are located at first and second ends, respectively.

24. A process of assembling a speaker apparatus, having a speaker and a circuit to control the speaker, which generates a large amount of heat, comprising:

- opening an air inlet into the speaker apparatus;
- opening an air outlet from the speaker apparatus at a higher altitude than the inlet; and
- arranging an air path through the speaker apparatus, which is proximate to the circuit, through which a convection current of air flows to thereby cool the circuit.

25. The process according to claim 24, further comprising:

- supporting the speaker with a speaker box; and
- arranging a duct to extend from inside the speaker box to an exterior of the speaker apparatus, having a longitudinal axis which is substantially perpendicular to a direction of the convection current, to emit back sound of the speaker.

26. A speaker apparatus, including a speaker and a circuit to operate the speaker, comprising:

- a speaker box, including a first duct hole, to enclose a back of the speaker;
- a casing, into which the speaker box is insertably held and in which the circuit is to be accommodated, having first and second openings and a second duct hole, the second duct hole being substantially coaxial with the first duct hole when the speaker box is held in the casing;
- a duct, penetrating the first and second duct holes, to emit sound emanating from the speaker, wherein external air enters and exits the casing through the first and second openings and circulates therein to cool the circuit.

27. A speaker apparatus, including a speaker and a circuit having fins protruding therefrom to operate the speaker, comprising:

- a speaker box, including a first duct hole, to enclose a back of the speaker;
- a casing, into which the speaker box is insertably held and in which the circuit is to be accommodated, having first and second openings and a second duct hole, the second duct hole being substantially coaxial with the first duct hole when the speaker box is held in the casing;
- a duct, penetrating the first and second duct holes, to emit sound emanating from the speaker, wherein external air enters and exits the casing through the first and second openings and circulates therein to cool the circuit by dissipating heat through the fins as the air contacts the fins.